**Missouri Mine Rescue Contest**

**Rolla, MO**

**October 3 – October 6, 2016**

**Written Test – Tech (Bio 240 R/S)**

1. The purpose of an airlock is to separate two different atmospheres while still permitting miners to enter and exit without mixing the atmosphere.
2. True (Module 3-23)
3. False
4. Under normal circumstances permanent bulkheads would be constructed in good air, so they could be built by mine rescue teams rather than barefaced work crews.
5. True
6. False (Module 3-23)
7. \_\_\_\_\_\_ are spring loaded expandable metal rods that can be used instead of posts to erect temporary bulkheads.

A. Posts

B. Roof Jacks

C. Pogo Sticks (Module 3-22)

D. None of the above

1. A regular anemometer is used to determine air velocities from 120 to 2,000 feet per minute.

A. True (Module 3-21)

B. False

1. If the anemometer reading is take for less than a minute, the velocity reading will have to be converted to \_\_\_\_\_\_\_\_\_.
2. cubic yard per minute
3. feet per second
4. feet per minute (Module 3-17)
5. The specific gravity of Oxygen is 1.1054.

 A. True (Module 2-13)

 B. False

1. Chemical analysis cannot detect oxygen deficiency.
2. True
3. False (Module 2-14)
4. Since your self-contained breathing apparatus supplies you with oxygen, it will protect you from all gases.
5. True
6. False (Module 2-10)
7. Asphyxiate means to suffocate or choke.
8. True (Module 2-10)
9. False
10. Of course you can rely on only your senses to positively identify a gas.
11. True
12. False (Module 2-8)
13. Industrial Scientific recommends the “3& 3 Sampling Rule” when sampling with a motorized pump and tubing.
	1. True
	2. False (Page 5)
14. High off-scale readings may indicate explosive concentration.
	1. True (Page 4)
	2. False
15. After calibration, the MX6 ibrid will automatically reset peak measurements.
	1. True
	2. False (Page 11-12)
16. The sensor readings are displayed as solid black numerals during operations and alarm conditions.
	1. True
	2. False (Page 17)
17. The measurement range of a carbon dioxide IR sensor properly installed in an MX6 ibrid unit is \_\_\_\_\_ % to \_\_\_\_\_\_ %.
	1. 0 to 1
	2. 0 to 5 (Page 38)
	3. 0 to 50
18. Unless specified otherwise, configuration-mode display screens time out after \_\_\_\_ seconds. When activated, the main configuration screen remains on for \_\_\_\_\_ minutes.
	1. 60, 5
	2. 90, 5 (Page 32)
	3. 120, 10
19. The certification marking for MSHA is.
	1. CFR 30, Part 22, Class1
	2. CFR 30, Part 22, Class2
	3. CFR 30, Part 22, Methane-air Mixture (Page 2)
20. During a bump test of the MX6 ibrid, the sensor must reach a gas reading of \_\_\_% or greater of the applied gas (calibration) concentration within 60 seconds to pass.
	1. 25
	2. 30
	3. 50 (Page 36)
21. With an extended range Li-ion battery pack with an MX6 ibrid pump the typical run time is \_\_\_\_ hours.
	1. 5
	2. 15
	3. 20 (Page 37)
22. If the battery life remaining is less than \_\_\_ minutes, the battery icon flashes on the display and audible battery low alarm.
	1. 15
	2. 30
	3. 45
	4. 60 (Page 33)
23. If the BioPak 240 R & S maintenance tag is missing you must.
	1. Perform a quick inspection and place into service
	2. Place into service only after completing a full Turn-Around Maintenance procedure (User Manual Pg. 14 (r) and User Manual Pg. 6 (s))
	3. Complete a Low Pressure Leak Test
24. Always handle oxygen cylinders with care. Do not allow –
	1. Oil, grease or other combustible materials to come in contact with the cylinder valve. (240 R & S User & BM S-Special or Critical instruction )
	2. Oxygen cylinder to go below 1,500 psi
	3. Oxygen valves to be opened all the way
25. Under the General Service Procedures in the Benchman Manual the Breathing Diaphragm is removed to:
	1. Check the expiration date on the back
	2. Ensure oxygen acidosis is not present
	3. Check for signs of wear, cracking or rot (BM 240R Pg. 17 & 240S Pg. 22)
26. Never substitute, modify, and or omit parts. Use only exact replacement parts in the configuration specified by:
	1. MSHA and NIOSH
	2. The Manufacturer (UM/BM NIOSH Approvals Page)
	3. OSHA and State Agencies
27. The emergency bypass button on both the BioPak 240R and BioPak 240S is:
	1. Located next to the chin strap
	2. Blue
	3. Red (240S UM Pg. 9 and 240R UM Pg. 12)
28. Only the BioPak 240 R comes with a Speaking Diaphragm.
	1. True
	2. False (240R UM Pg. 19 and 240S UM Pg.9)
29. All repairs beyond the scope of the BioPak 240R and BioPak 240S manual must be repaired by a Drager Representative.
	1. True
	2. False (240R UM Pg. 6 and 240S UM Pg.4)
30. Emphysema is a condition that could limit the use of the SCBA.
	1. True (240R UM Pg. 6 and 240S UM Pg.4)
	2. False
31. The SCBA is only approved when the Oxygen Cylinder is fully charged with compressed Air.
	1. True
	2. False (240R UM Pg. 7 and 240S UM Pg. 5)
32. Actual duration of the apparatus will vary to factors such as ventilation velocity in the mine.
	1. True
	2. False (240R UM Pg. 24 and 240S UM Pg. 11)